

Spread of measles

Measles is highly contagious and can spread rapidly via the airborne route in a community, even when the majority of people are immune. The vulnerable populations included unimmunized infants, those who have only received one dose of measles vaccine, the immunocompromised, and even some people born before 1957.

Infants

Most infants are protected from infection by passive transplacental maternal antibodies. However, since measles vaccine is usually not given to children until ages 12-15 months, most children ages 6-12 months are susceptible to measles, and are at the high risk for complications.

Preschoolers

Approximately ninety-five percent of people who have received one dose of measles vaccine are immune. However, this means that 5% are not immune. Two doses of properly timed measles vaccine are needed to give > 99% protection against measles. Therefore, since the second dose of measles vaccine is usually scheduled prior to school entry between ages 4-6 years old, many preschoolers are still susceptible to measles.

The Immunocompromised

Immunocompromised people are very susceptible to measles and to complications of measles, even if they have been previously vaccinated against measles. Immunocompromised patients with disorders associated with an increased severity of viral infections should not be given measles vaccine. However, their risk of being exposed to measles can be decreased by making sure that close contacts are fully immunized or immune to measles.

Adults Born in the Prevaccine Era

People born before 1957 are generally considered to be immune to measles since almost everyone in the prevaccine era had measles infection. The key word is “almost everyone.” Therefore, measles should be suspected even in adults born before 1957 who have compatible clinical symptoms.

Reasons for Giving Vaccine to Infants in Outbreaks

Accelerated schedules for measles vaccination in children during outbreaks are intended to protect children who may have lost protective maternal antibodies and may not have yet been fully immunized. Children less than a year of age do not respond as well to measles vaccine as do older children. This is the reason why measles vaccine is not usually given until at least 1 year of age. However, in outbreak situations, measles vaccine is the best way to protect this highly vulnerable population

Full Protection Requires Two Doses Given on or after First Birthday

Children who receive their first dose of measles vaccine before 12 months of age (during an outbreak) still require two additional doses once they turn 1 year old. All doses of measles vaccine should be separated by at least 4 weeks.

Two doses of measles vaccine are needed to give optimal protection. The second dose of vaccine is usually given at 4-6 years of age. However, to rapidly get >99% protection in an outbreak situation, children over 12 months of age should get the first and second dose of measles vaccine as close together as possible as long as there is at least 4 weeks between the first and second dose of the vaccine.

Adults Who Also Need Measles Vaccine

To be sure of being immune to measles, adults born in 1957 or after should have at least one dose of measles vaccine or serological evidence of immunity to measles.

Unimmunized Contacts Need Vaccine or Gamma Globulin

Public health intervention can help prevent the spread of measles to contacts. Known contacts of suspected or confirmed cases of measles should receive measles-containing vaccine within 72 hours of exposure, or gamma globulin within 6 days of exposure. Gamma globulin should be given instead of measles vaccine to contacts less than 6 months old, pregnant women, immunocompromised persons, or those who have a contraindication to measles vaccine. Known contacts of suspected or confirmed cases of measles who were born prior to 1957 should be given a single dose of MMR within 72 hours of exposure or gamma globulin within 6 days of exposure.

Complications from Measles

Measles vaccine has received unwarranted negative publicity in recent years. People should be reminded that measles is a very serious illness. In the prevaccine era in the US, approximately 500,000 cases of measles were reported every year. In addition, there were an estimated 500 deaths; 150,000 cases with respiratory complications (such as viral pneumonia, bacterial pneumonia, and croup); 100,000 cases of otitis media; 48,000 hospitalizations; 7,000 seizure episodes; and 4,000 cases of encephalitis which left up to ¼ of patients permanently brain damaged or deaf¹. In addition, people have been concerned about unproven allegations against thimerosal. There is no thimerosal in measles-mumps-rubella (MMR) vaccine.

For More Information about Measles and Measles Vaccine

- The ADHS measles website for measles information for clinicians and families at (http://www.azdhs.gov/phs/oids/epi/disease/measles/measles_g.htm)
- The Centers for Disease Control and Prevention measles website at <http://www.cdc.gov/vaccines/vpd-vac/measles/default.htm> .
- The Arizona Department of Health Services Office of Infectious Disease Services at (602) 364-4562.

¹Plotkin SA. Orenstein WA. Vaccines. Third Edition. WB Saunders, St. Louis, 1999, p. 229